

Date: Tue, 10 May 94 04:30:20 PDT  
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>  
Errors-To: Ham-Homebrew-Errors@UCSD.Edu  
Reply-To: Ham-Homebrew@UCSD.Edu  
Precedence: Bulk  
Subject: Ham-Homebrew Digest V94 #124  
To: Ham-Homebrew

Ham-Homebrew Digest                      Tue, 10 May 94                      Volume 94 : Issue    124

Today's Topics:

\*\*\*\*\*Ideas sought for a 400MHz oscillator design\*\*\*\*\* (2 msgs)  
                                 diode ring detector with smd's?  
                                 Help w/ 'RF Design' Magazine article 1/88 issue  
                                 Making CW with a CB rig?  
                                 Metal-Encased Mica Caps  
                                 MOSFET Power Amp Schematics/Info ??? (2 msgs)

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>  
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>  
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available  
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text  
herein consists of personal comments and does not represent the official  
policies or positions of any party. Your mileage may vary. So there.

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Date: 10 May 94 08:17:42 GMT  
From: agate!howland.reston.ans.net!usc!nic-nac.CSU.net!charnel.ecst.csuchico.edu!  
rat!zeus!snorris@ucbvax.berkeley.edu  
Subject: \*\*\*\*\*Ideas sought for a 400MHz oscillator design\*\*\*\*\*  
To: ham-homebrew@ucsd.edu

I am working on a senior project that requires the use of a 400MHz sine  
wave local oscillator. This oscillator will be used to construct a portable,  
multi-band frequency converter which can be placed on a handheld amateur  
radio.

My question is: Does anyone have any ideas for generating a 400MHz sinewave?  
It should be capable of delivering about +7dBm into 50 ohms and be able  
to run from a 7.2V battery.

I have looked around a bit, but have yet to find anything that really  
goes up that high in frequency. I have kicked around a few ideas, but I

wanted to see if anyone here had some good ideas before I started trying circuits.

Also, I would rather the circuit use lumped elements (i.e SMD) because I want to keep the circuit absolutely as small as possible and I think distributed elements would make it too large for what I want.

So if anyone has any circuit ideas or can suggest some good references, then please E-mail me as soon as possible.

Thanks in advance,

Sean

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Sean Norris    snorris@trumpet.aix.calpoly.edu  
--KE6BTE--    Electronic Engineers do it with less resistance.  
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-----  
Date: 10 May 94 09:43:00 GMT  
From: agate!howland.reston.ans.net!math.ohio-state.edu!jussieu.fr!univ-lyon1.fr!  
elendir@ucbvax.berkeley.edu  
Subject: \*\*\*\*\*Ideas sought for a 400MHz oscillator design\*\*\*\*\*  
To: ham-homebrew@ucsd.edu

Sean Norris (snorris@harp.aix.calpoly.edu) wrote:  
: I am working on a senior project that requires the use of a 400MHz sine  
: wave local oscillator. This oscillator will be used to construct a portable,  
: multi-band frequency converter which can be placed on a handheld amateur  
: radio.  
: My question is: Does anyone have any ideas for generating a 400MHz sinewave?  
: It should be capable of delivering about +7dBm into 50 ohms and be able  
: to run from a 7.2V battery.

Sean,  
Build a 130 MHz oscillator and use a frequency tripler. Works fine. The tripler can also amplify your signal up to your requirements ; the oscillator is not loaded anymore, so it is far more stable.  
It's the way I'm going to cope for a home-made VHF/UHF all mode TX.

73 !  
Vince.

--  
PSG --- Paris SG football club.            |            Ham radio call : F1RCS  
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ENST - Ecole Nationale Supérieure des Telecommunications, Paris, France

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Date: Mon, 9 May 1994 12:24:05 GMT  
From: psinntp!arrl.org!zlau@uunet.uu.net  
Subject: diode ring detector with smd's?  
To: ham-homebrew@ucsd.edu

JimN00CT (jimn0oct@aol.com) wrote:  
: Has anyone experimented with the surface mount HP-2800 hot carrier diodes as  
: diode ring detectors for DC receivers?? I'm curious to know if they will give  
: similar performance to regular HP-2800's? I need a \_SMALL\_ package for a  
: receiver I'm building, and these would be perfect.

The popular Mini-Circuits SBL-1 uses a little surface mount mixer ring  
in its mixers. Usually, surface mount devices work better than leaded  
devices in terms of switching speed, though you sometimes lose a bit  
in the power handling capability.

Supposedly, the best diodes to use in DC receivers are those optimized  
for low 1/f noise. I think mesh diodes were designed for this purpose.  
Otherwise, the mixer may be noisier than you might expect from the  
conversion loss.

If you buy diode pairs or quads, make sure they are hooked up the way  
you want them to.

--  
Zack Lau KH6CP/1 2 way QRP WAS  
8 States on 10 GHz  
Internet: zlau@arrl.org 10 grids on 2304 MHz

-----  
Date: 9 May 1994 14:33:14 GMT  
From: yale.edu!noc.near.net!hopscotch.ksr.com!jfw@yale.arpa  
Subject: Help w/ 'RF Design' Magazine article 1/88 issue  
To: ham-homebrew@ucsd.edu

dean@splinter.coe.neu.edu (Dean Gelabert) writes:  
> Hi:  
> Does anyone read RF Design? I'm looking for an article entitled 'Simple  
> Spectrum Analyzer, A Pocket Sized 0-100 Mhz Unit Uses Only Three IC's'  
> by A. Halfrick. I believe it's in the Jan. 88 issue. If so, could I please  
> have a copy or an address to retrieve that issue? Thanks in advance.  
> -Thomas

You can get photocopies of articles from RF Design itself; they don't have actual back issues that old (I actually called about that one a couple of years ago, but couldn't remember the article name! Now I can finally get it :-). I'll look up the phone number tonight (my RF Design pile is at home). (Actually, I seem to recall that it's the February issue, but I'll find out.)

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Date: 9 May 1994 08:01:29 -0700  
From: ihnp4.ucsd.edu!swrinde!gatech!udel!news2.sprintlink.net!news.sprintlink.net!  
connected.com!seatimes.seatimes.com!seatimes.seatimes.com!not-for-  
mail@network.ucsd.edu  
Subject: Making CW with a CB rig?  
To: ham-homebrew@ucsd.edu

: The problem is in the reception. How will you be able to hear it? The  
: CB sets do not have a BFO, or Beat Frequency Oscillator, like Ham Radios  
: do. You will have to make up one for your receiver.

The CB sets with SSB will work just fine. You know, those sets that  
advertise 120 channels! ;-)

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Date: 9 May 94 18:53:45 GMT  
From: sdd.hp.com!col.hp.com!srigenprp!alanb@hplabs.hpl.hp.com  
Subject: Metal-Encased Mica Caps  
To: ham-homebrew@ucsd.edu

Doug Braun (dbraun@ilx049.iil.intel.com) wrote:  
: A HT Amp I bought (RF Concepts) uses these funny capacitors in  
: the RF circuits. They look like a collection of bits of mica and other  
: stuff, clamped in a little metal frame. They are between 1/4" and 1/2"  
: on a side. I also just got a "Surplus Sales of Nebraska" flyer, which  
: lists some of them for sale.

: I was wondering: what is the advantage of this type of device?  
: They look sort of crude, with an open construction that could  
: let solder, moisture, etc. get in and mess them up.

High Q, low inductance and low cost.

AL N1AL

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Date: 9 May 94 19:08:28 GMT

From: agate!howland.reston.ans.net!usc!nic-nac.CSU.net!charnel.ecst.csuchico.edu!  
olivea!korie!newsworthy.West.Sun.COM!abyss.West.Sun.COM!spot!  
myers@ucbvax.berkeley.edu  
Subject: MOSFET Power Amp Schematics/Info ???  
To: ham-homebrew@ucsd.edu

In article 4155@ccc.amdahl.com, dws30@p1dbg02cd.amdahl.com (David Sharpe) writes:  
>Subject says it all for the most part. Toying with the idea of building  
>a QRP Amp out of MOSFETS. Any schematics or pointers to information  
>would be greatly appreciated. Want to build one for VHF/UHF and HF when  
>I tackle the code and are up to speed. (Beginner = Low Wattage)

For VHF/UHF, meaning above 6m, you'd probably need 'real' power RF MOSFETs,  
such as the MRF171, etc. These are fairly pricey, but offer high gain and  
a lot of power, but they are fairly easy to fry. I'd suggest getting your  
feet wet with the less expensive bipolar transistors, such as the 2N5590,  
or MRF1946. These are more rugged and would make a better beginner project.

For HF and VHF-low (meaning 6m), you can probably get really good results  
with conventional switching FETs. The IRF510 (or IRF511) is easily available,  
cheap, and offers good performance to 60MHz. You can expect between 5-20W  
output, depending on frequency and circuit design. There have been articles  
in QST and other mags, also, look for Doug DeMaw's QRP Notebook at a ham  
store. I've had an MTP3055E deliver 40W of RF at 14Mhz with about 500mW of  
drive. Good stuff, but don't go for max power if you want the part to last :=).  
On the other hand, replacements are about \$1, so what the heck?

73  
Dana

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\* Dana H. Myers KK6JQ, DoD#: j | Views expressed here are  
\*  
\* (310) 348-6043 | mine and do not necessarily \*  
\* Dana.Myers@West.Sun.Com | reflect those of my employer  
\*  
\* This Extra supports the abolition of the 13 and 20 WPM tests \*

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Date: 10 May 94 03:41:05 GMT  
From: agate!howland.reston.ans.net!usc!nic-nac.CSU.net!charnel.ecst.csuchico.edu!  
olivea!korie!newsworthy.West.Sun.COM!abyss.West.Sun.COM!spot!  
myers@ucbvax.berkeley.edu  
Subject: MOSFET Power Amp Schematics/Info ???  
To: ham-homebrew@ucsd.edu

In article 6nF@netcom.com, tgm@netcom.com (Thomas G. McWilliams) writes:  
>David Sharpe (dws30@p1dbg02cd.amdahl.com) wrote:  
>: Subject says it all for the most part. Toying with the idea of building  
>: a QRP Amp out of MOSFETS. Any schematics or pointers to information  
>: would be greatly appreciated. Want to build one for VHF/UHF and HF when  
>: I tackle the code and are up to speed. (Beginner = Low Wattage)  
>  
>I've wondered about this too. It seems to me that a power MOSFET  
>would not be a good choice for a class C amp. Power MOSFETS have  
>a "parasitic" diode that is connected from drain to source. This  
>diode is an artifact of the manufacturing process. In most  
>applications this diode is reverse biased. But what happens in  
>class C service when the drain swings negative (for N channel  
>mosfet)? Wouldn't this intrinsic diode tend to clamp negative  
>swing on the drain? It would degrade the efficiency and Q of  
>the output network, I would think. I guess class A or AB service  
>might work.

Umm... under normal circumstances, the drain doesn't swing below ground.

I've built several power MOSFET RF amplifiers, mostly with IRF511 and MTP3055E. They all worked quite well. Using a 24V drain supply results in greater efficiency and higher output power. I could get 35W+ out of an MTP3055E on 20m with maybe 500mW of drive. I never managed to find a really good input match; it was always about 2:1, which isn't awful. A -3dB pad would improve it a little.

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\* Dana H. Myers KK6JQ, DoD#: j | Views expressed here are  
\*  
\* (310) 348-6043 | mine and do not necessarily \*  
\* Dana.Myers@West.Sun.Com | reflect those of my employer  
\*  
\* This Extra supports the abolition of the 13 and 20 WPM tests \*

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Date: 9 May 94 13:43:46 GMT  
From: ihnp4.ucsd.edu!agate!cat.cis.Brown.EDU!noc.near.net!news.delphi.com!BIX.com!  
hamilton@network.ucsd.edu  
To: ham-homebrew@ucsd.edu

References <2q3jks\$bhl@dartvax.dartmouth.edu>, <hamilton.767917015@BIX.com>,  
<1994May5.152336.54@drager.com>,  
Subject : Re: Newbie code Practice receiver -- feasible?

landisj@drager.com (Joe Landis - System & Network Mgr) writes:

>In article <hamilton.767917015@BIX.com>, hamilton@BIX.com (hamilton on BIX) writes:

>> My advice is to not to waste your money on something cheap. You only  
>> get what you pay for. If you're looking for some inexpensive code  
>> practice, get the ARRL code practice tapes. They really work and  
>> they're really worth the money.  
>>  
>> Don't expect to practice with the W1AW signals (depending on your  
>> location) until you get a "real" radio.

>You can get an old Heathkit reciever or transceiver for under \$100, and a good  
>one, at that. I got my code up from 5WPM to over 20 by listening to tapes made  
>from W1AW on my old SB303. There was an SB303 posted for sale here recently for  
>\$90. This is a great 2nd receiver to have around too. Or you can always sell  
>it for about what you paid for it.

>Joe - AA3GN

Just to clarify: I agree with Joe's remarks. An older radio that's inexpensive merely because it's used and perhaps lacks all the fancy digital features, etc., but is otherwise servicable meets my definition as "real". My suggestion that one should not buy something cheap was in the context of discussion of one of those \$30 kits designed solely for listening to W1AW.

Regards,

Doug Hamilton    KD1UJ    hamilton@bix.com    Ph 508-358-5715  
Hamilton Laboratories, 13 Old Farm Road, Wayland, MA 01778-3117, USA

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End of Ham-Homebrew Digest V94 #124

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